

# Radio Shack®

# MICROCOMPUTER NEWSLETTER

Edition No. 2

November, 1978

Radio Shack One Tandy Center Fort Worth, Texas 76102

## What's Been Happening . . .

As you no doubt are painfully aware — (we are) — Radio Shack's computer group has had more to do in the past nine months than we could say grace over! In our efforts to solve raw material delivery problems, get DOS debugged, and get production up, we've neglected the *Microcomputer Newsletter*. It is being resurrected! Hopefully, we now have the facilities to communicate with you — our valued TRS-80 owners — on a more regular basis through this medium. We will try to keep you informed about new hardware, software, programming hints and, perish the thought, any bugs we might have. It has been so long since our last Newsletter that everything just isn't going to fit into one publication, so we'll include the more timely information. We welcome your comments and suggestions, too.

We're working furiously on new products and new software packages, which will be announced as we approach their release dates. Please be patient, and don't ask your local store to order items on which no catalog number has been released: It will more often than not simply result in lost orders. But, *please do* ask them to order those items we've announced! We want and we appreciate your business.

## Keyboard Debounce

Many of you have experienced what we call "Keybounce" — multiple letters from one keystroke. In almost every case it is traceable to contaminated key contacts. It can be dust, dirt, cigarette smoke, or almost any kind of residue. Usually, this doesn't occur except in Level-II computers, and after some use. We will have available shortly a Level-II cassette machine-language program which extends the keyboard "debounce" routine to eliminate the problem. Keep in touch with your local Radio Shack stores for availability information.

## Real Time Clock

This same tape will also contain a machine-language routine allowing access to the Real-Time Clock contained in our Expansion Interface, without the need for DISK BASIC. It should prove most useful to those of you who need this feature for use under LEVEL-II, but don't need the TRS-80 Mini-Disk system.



## New Radio Shack TRS-80™ Quick Printer

Here is a new printer, just right for those of you who don't need the more "formal" printout of our TRS-80 Line Printers, yet still need full "line printer" capabilities. Program listing, longer detailed printouts, 80-character line width and similar features were previously available only on the more expensive printers. Now they're yours inexpensively, plus upper and lower case, software selectable line widths (different character widths) of 20, 40 and 80 characters, underlining, and an audible tone. The TRS-80 Quick Printer is also "quicker" than our other line printers — 150 lines per minute, on

4.75-inch wide aluminum-finished paper. Characters are formed on a 5x8 dot matrix. The Quick Printer plugs into the Expansion Interface's line printer port, using our line printer connecting cable (available separately). So if you've been needing an inexpensive line printer for program debugging, statistical, data, or any other type of fast printed output . . . wait no longer! Order your TRS-80 Quick Printer and cable today. Level-II and Expansion Interface required. *Connecting Cable*, Cat. No. 26-1401 . . . \$39.00. *Quick Printer*, Cat. No. 26-1153 . . . \$499.00



## TRS-80 Carrying Cases

Now it's easy to carry your TRS-80 system with you! Our new carrying cases do it all. One attache-like case houses the keyboard, recorder, power supply and cassette tapes, while the other is a nice snug fit for the video monitor. Both are foam-lined, and finished in black leatherette vinyl. They are available only in the set of two. Order your TRS-80 carrying cases today. Cat. No. 26-500 . . . \$69.00



## Data Communications Comes to the TRS-80!



Data communications can materially expand your computing horizons. It means you can communicate with large "data base" computers, using your TRS-80 as an intelligent terminal. When you're off-line, of course you still have the considerable power of the TRS-80 as a stand-alone computer. Two new peripheral offerings from Radio Shack make this communication possible. The new RS-232C Serial Interface Board plugs in inside your Expansion Interface, and allows not only communication with other computers, but gives you the means to interface quite a number of items built by other manufacturers, including, for instance, printers, plotters, modems and card readers. Special software on cassette tape is furnished to make the TRS-80 behave like a teletype for use as a terminal. Connection to large computers will require some user-furnished software to make the '80 compatible with the large computer's individual protocol. RS-232C Board, Cat. No. 26-1145 . . . \$99.00

Communication over telephone lines will require our other new communications device (in addition to the RS-232C Board), the TRS-80 Telephone Interface-I. This interface allows two-way communication with any other computer *which is equipped with an "originate/answer" modem or acoustic coupler*. Telephone Interface-I is an "originate only" unit, and two TRS-80's so-equipped cannot communicate with each other. If this is your aim, be patient . . . we'll have good news after the first of the year! If you're a business user, and need communication with peripherals or other computers. . . here are the answers: The RS-232C Board and Telephone Interface-I. Order your Telephone Interface-I today, Cat. No. 26-1170 . . . \$149.00

(Detailed technical information on both products is contained in our new 20-page Microcomputer Catalog, RSC-2. Write for your free copy.)

## NEW SOFTWARE

**GENERAL LEDGER-I.** A disk-based general ledger program for the small business, designed to run on our 32-K "Business System" including 32K of RAM, and two disk drives. The system allows you to totally define your own chart of accounts, up to a total of 100, using 4-digit account numbers. Full 16-digit precision is used throughout. Up to 510 entries may be made in any one posting session, and up to 1830 entries are allowed in any one month. The system generates well-defined audit trails, and automatically detects an "out of balance" condition. Input routines have been made as error-proof as possible, and error correction and recovery is easy. The manual includes complete instructions, and even an example system initialization you can go through for practice before starting your own system. Reports generated include a General Ledger Trial Balance, Posting Summaries (one in document number sequence and one in account number sequence), Monthly Transaction Reports (account number or entry sequence), Income Statement and Balance Sheet. The package will include one program diskette and one blank diskette in a binder with a very comprehensive manual. Target date for General Ledger-I is December 10, so if you use the TRS-80 Business System in your business, you'll want to order your General Ledger system today! Cat. No. 26-1552 . . . \$99.95

**MAILING LIST SYSTEM.** Many of you have asked for a program to create, add to, edit and print labels for your own business, church or club mailing list. Well, now you have it! Our Mailing List Systems (yes, there will be two — cassette tape and disk versions) allow lists including name, either company name or phone number, address, city, state, zip code, and a special (optional) "select code." The select code can be any type of special code you need to classify the people on the list, such as "commercial account" or "dues paid through '79," or "non-resident member." You may print labels on the tractor feed TRS-80 Line Printer including the entire list, or you may print just a selected portion of the list. You have almost complete freedom of selection as to how a partial list is printed. It may be by city, zip code areas, your "select code," or even all "Smiths" or all persons whose last name begins with "J." You could select only those people living in a designated state, or those who live in the "232" telephone exchange.

For the tape version, a minimum of 16K RAM is required, and the more memory you have, the larger your individual list segments (in-memory at one time) may be. The total length of the list can be unlimited if you want to store portions of it on a library of cassettes. The disk-based system requires 32K RAM, and can store about 250 names on your system diskette (in a 1-drive system), or around 600 names per data diskette. So if you have a mailing list to sort out, visit your local store today, and order your Radio Shack Mailing List System. *Tape Mailing List, Cat. No. 26-1503 . . . \$19.95, with program cassette & 1 blank C-20.*

*Disk Mailing List, Cat. No. 26-1551 . . . \$39.95, with program disk and 1 blank.*

**MICROCHESS.** Even if you don't play Chess, if you like outstanding computer games, here is one you just can't miss! Machine language programming gives Microchess instantaneous and outstanding screen graphics. It plays in your choice of three levels of difficulty, so you can even use this program to learn chess, or maybe to polish up your game. You're even allowed to swap ends of the board with the computer, and finish the game with the computer's chessmen! Since you can also pass a turn, by alternating passes with "swaps," you can actually make your TRS-80 play against itself. Microchess thinks ahead, and considers almost all possible moves as many as three rounds ahead. Pit your chess skills against the TRS-80 in a truly fascinating computerized Chess match. Available around November 10. Order TRS-80 MICROCHESS now! Cat. No. 26-1901 . . . only \$19.95

**GAMES PACK-I.** A collection of six games for all computer game fans. All will run in a Level-I, 4K TRS-80. Included are CHECKERS, in which you play this favorite game against the TRS-80; HAMMURABI, where you try your skill at running a nation; RANDOM TIC-TAC-TOE, a new and challenging twist to an old game, requiring almost the planning and concentration of chess; SPACE TAXI, a new version of the popular Lunar Lander type of computer game; DRAW, a fascinating and useful series of 3 programs which allow you to draw patterns, save them on tape, and use them again; and STAR PILOT, a real-time experience in shooting down enemy aircraft who are constantly taking evasive action. If your family is looking for the perfect Christmas gift for you, and you own a TRS-80, circle this one and leave this newsletter lying around open to this page. You'll be glad you did! Available around November 10. Cat. No. 26-1805 . . . \$19.95



# HELP!

We need your help in several areas:

## Writers

Radio Shack is interested in finding some TRS-80 owners in the field who can write. We need some outside help from qualified people who can go through new software and write user's manuals for us. If you're interested (and can write) send a resume, sample of your work, and a letter to Tandy Systems Design, 1100 One Tandy Center, Fort Worth, Texas 76102. Don't wait... we have a number of new software packages just about ready to go, needing documentation. With some outside help, they'll get to our stores much faster.

## Software

We're always looking for good software packages for serious computer applications. Especially valuable would be packages designed for useful applications in the home (anyone have anything for the housewife?), business, laboratory, or school. Software we purchase, or produce on a royalty basis, must be well-written. It must make generous use of the TRS-80's graphics capabilities when applicable, and above all, it must have wide appeal to a large market area. We seldom accept even the best software that's useable only by a relatively small group of people. It must be well documented. And, yes, we do accept good *original* games. If you're qualified to write applications on contract, and have your own TRS-80 system; or if you have something already that you think meets these requirements, write (or send tapes) to Radio Shack Software, 700 One Tandy Center, Fort Worth, Texas 76102.

## Applications

In future newsletters, we would like to highlight unusual TRS-80 applications. If you are presently using your TRS-80 in an interesting and unique application, we'd like to hear about it. Send detailed information on the hardware, software, and description of the application. Also, in your letter, give us permission to reprint the information.

## New Technical Manual for TRS-80

Our new "TRS-80 Microcomputer Technical Reference Handbook" is finally available. It contains theory of operation, adjustments and troubleshooting, connections to the outside world, parts list and schematics. 108 pages of the information most of you have been asking for, and all of you will probably want on file for reference.

Even if you aren't a computer technician and don't want to do more than program your TRS-80, this handbook will give you an interesting overview of just what goes on inside the computer. Personal Computers are new and exciting — find out what makes yours tick! Order Cat. No. 26-2103... only \$9.95

## Line Printer Line Feed

As most of you know, the normal line feed ASCII code is recognized by the TRS-80 Line Printers only when it is nested in between other codes. The result is that to make the printer space up, you've had to LPRINT" ". Next time, try LPRINTCHR\$(138). Are you using a FOR...NEXT loop for more than one line-feed? Try LPRINT-STRING\$(25,138). The first number in the parenthesis should be the number of line feeds you want. CHR\$(138) is really a graphics character, but because of its "bit pattern" and the action of the printer logic, it works.

## Program Tip for Disk BASIC Users

Some of you have expressed concern over the length of time sometimes required to sort alphanumeric data. The reason is BASIC's use of free string space. Every so often, BASIC must collect free string variable space by reworking the string area of high memory. For string areas of 5K or more, the time can run into several minutes, appearing to "hang up" the TRS-80. DISK BASIC users can inhibit this action by using the left-hand MID\$ function, but all strings must be the same length. In the program listed below, observe line 170 which causes all strings to be L characters long. Lines 2070, 2080, and 2090 use the MID\$ function to exchange A\$(B) with A\$(B+1) without using any temporary free string space. Since no temporary space is used, the collection routine which would delay the sort never occurs.

```
100 / MAINLINE SORTING DRIVER
110 /
120 CLEAR 1000: T=10' MAX NUMBER OF ITEMS
130 DIM A$(T)
140 L=10' FIXED LENGTH OF A$ ITEMS
145 T$=STRING$(L, " ") / FOR PADDING BLANKS
150 CLS:PRINT"READING DATA..."
160 FOR I=1 TO T: READ A$(I)
170 A$(I)=LEFT$(A$(I)+T$,L) / PAD BLANKS TO MAKE LENGTH OF L
180 NEXT I:PRINT"SORTING..."
190 GOSUB 2000:PRINT:PRINT"SORT DONE"
200 INPUT"PRESS ENTER TO LIST SORTED DATA":A$
210 FOR I=1 TO T:PRINT A$(I):NEXT I: END
220 DATA Y, Z, X, C, V, E, D, C, B, A
1000 / SUBROUTINE TO SORT ALPHANUMERIC DATA
1010 / DISK BASIC --- USE OF LEFT-HAND MID$ INHIBITS
1020 / "HANG-UP" FOR FREE STRING SPACE COLLECTION.
1030 /
1040 / T IS THE NUMBER OF ITEM TO BE SORTED
1050 / T$ IS A TEMPORARY SWAPPING VARIABLE
1060 / A$ IS THE ALPHANUMERIC DATA ARRAY OF DIMENSION T
1070 / L IS THE LENGTH OF DATA IN A$ --- MUST BE FIXED LENGTH
1080 /
2000 T$=STRING$(L, " ")
2010 DEFINT A, B
2020 FOR A=1 TO T-1
2030   FL=0: PRINT@96, "PASS: ", A;
2040   FOR B=1 TO T-A
2050     IF A$(B) <= A$(B+1) THEN 2100
2060     FL=1
2070     MID$(T$, 1, L)=A$(B)
2080     MID$(A$(B), 1, L)=A$(B+1)
2090     MID$(A$(B+1), 1, L)=T$
2100   NEXT B
2110 IF FL=1 THEN NEXT A
2120 RETURN
```



## More Program Tips

### Tip #1:

You say you're tired pulling the plug on your recorder when you need to reposition the tape . . . ??? Level-II owners, take heart!

```
100 OUT 255,4  
110 INPUT "REPOSITION  
TAPE, PRESS (ENTER) WHEN  
READY"; A$
```

Tape turns on when line 100 is executed, off when you press (ENTER). Easy, yes?

### Tip #2:

OK, we solved the plug-pulling, how about the button-pushing on the Screen Printer? Simple; at the point where you want the screen printed, insert a program line:

```
100 OUT 254,255
```

. . . and the screen printer prints, automatically.

### Tip #3:

" . . . But I've got a Line Printer," you say, "got any hints for me?" Here's one . . . Did you know your computer knows when the Line Printer is either READY or NOT READY (which can include hooked up but power not on, or power on, but front panel "select" switch off)? It does, and you can take advantage of it in your program. IF PEEK (14312) > 127 THEN your line printer is not ready. You can use this statement in a number of ways . . . when it's time to print, you can display on the video screen "LP NOT READY, PRESS (ENTER) WHEN READY," or you could simply look for the ready condition and if it is ready, print on the line printer, and if not, proceed to print on video.

### Tip #4:

When you're operating in DISK BASIC, and need to initiate DISK BASIC again

to give new answers to the "How many files" and/or "Memory size" questions, you don't need to go back into CMD"S" and type "BASIC" again. Type "SYSTEM," enter, then type "/20992" and enter, and "How many files?" will appear immediately.

## "RENUM"

Speaking of programming . . . Radio Shack has a new Level-II Line Renumbering cassette and it should be available just about the time you read this. It is a machine language program which can automatically renumber all of your program lines, either to "dress up" the finished program, or to give you space between crowded lines as you're programming. It, of course, rennumbers references to lines within your program, too (GOTO, GOSUB, etc.). If you do any of your own programming, and have Level-II, "RENUM" has to be on your "must have" list. Cat. No. 26-2004 . . . \$9.95

## New System Desk and Line Printer Stand

Tie it all together into a professional looking and working system with Radio Shack's new System Desk for the TRS-80 (pictured below). This attractive desk is sturdy gray metal, with a white top, trimmed with a black "comfort edge" in front. Two recessed cut-outs accommodate the keyboard and Expansion Interface, and leave the entire right side of the desktop open for work space or the new Quick Printer. Or you can give up the work area and put the TRS-80 Line Printer on the right. The System Desk is designed so that all interconnecting wiring for the system is concealed and out of your way. A bay beneath the right side houses from one to four Mini-Disk drive units, with provisions for adequate ventilation. To complete your TRS-80 computer system, order the new System Desk. Cat. No. 26-1301 . . . only \$199.00


Also available is a matching stand for the TRS-80 Line Printers. It has no top, and the Line Printer screws directly onto the top cross-members, through existing holes in the rubber feet. No holes to drill. Order now. Cat. No. 26-1302 . . . \$99.00



### TRS-80 System Desk

Cat. No. 26-1301

**199<sup>00</sup>**

Radio Shack  A Division of Tandy Corporation

Retail prices may vary at individual stores and dealers.